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Transdiagnostic perspective on psychological inflexibility and emotional dysregulation

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Abstract

Background: Psychological inflexibility and emotional dysregulation are a hallmark of psychopathology, being intrinsically embedded in emotional and personality disorders. However, the transdiagnostic mechanisms of psychological inflexibility and emotional dysregulation domains are still a matter of discussion.

Aims: The present study aims to explore the relationships between cognitive fusion (as a measure of psychological inflexibility), emotion regulation strategies, such as cognitive reappraisal and emotional suppression and emotional dysregulation domains in two different samples.

Method: In a cross-sectional design, 297 individuals were assessed with self-report measures and divided into non-clinical ($n = 231$) and clinical samples ($n = 66$), according to diagnosis.

Results: Results showed that the degree of cognitive fusion was higher in the clinical sample. However, significant correlations between cognitive fusion, emotional regulation strategies and emotional dysregulation domains were found in the two samples. Cognitive reappraisal and emotional dysregulation domains predicted cognitive fusion and mediated the relationship between cognitive fusion and symptomatology in the two samples.

Conclusions: Relationships between cognitive fusion and emotional dysregulation domains were found independent of diagnosis. The implementation of emotion regulation strategies may be related to individual differences. However, cognitive fusion, reappraisal and lack of strategies may be core transdiagnostic features in psychological inflexibility and emotion dysregulation.

Keywords: psychological inflexibility; emotional dysregulation; cognitive fusion; transdiagnostic perspective

Introduction

Psychological inflexibility, experiential avoidance and cognitive fusion

The debate between disorder-specific and transdiagnostic case conceptualization is ongoing (Dudley et al., 2011). Psychological inflexibility and experiential avoidance have been associated, implicitly or explicitly, with psychopathology, being intrinsically embedded in a wide range of psychological disorders (Kashdan and Rottenberg, 2010). They had been emphasized as a core pervasive psychological processes to be overcome within different approaches, such as behaviour therapy (Foa et al., 1984), client-centred therapy (Rogers, 1961), emotion-focused therapy (Greenberg, 2015), emotional schema therapy (Leahy, 2015), dialectical behaviour therapy (DBT; Linehan, 1993) and acceptance and commitment therapy (ACT; Hayes et al., 2011).

Hayes et al. (2011) define psychological flexibility as the ability to stay in the present moment, despite unpleasant internal experience, while choosing one's actions based on the context and personal values. However, there are other definitions (Kashdan and Rottenberg, 2010). According to the ACT psychopathological model, psychological inflexibility depends on three

fundamental domains, which are: (1) avoidance and cognitive fusion, (2) not being in the present and conceptualized self, and (3) values without committed action (Harris, 2009). According to Hayes *et al.* (2011), experiential avoidance and cognitive fusion are the core of psychopathology, emerging as the most representative constructs of psychological inflexibility. In this study, cognitive fusion will be used as a measure of psychological inflexibility.

Cognitive fusion may be defined as the rigid and inflexible way cognitions are experienced. It may reflect a human susceptibility to become trapped in thoughts as a consequence of a high degree of believability in their literal content (Hayes *et al.*, 2011; Hayes *et al.*, 2012; Gillanders *et al.*, 2014). When individuals attempt to avoid, disrupt, attenuate, suppress or control internal experience and/or unpleasant emotions, a paradoxical effect occurs, wherein emotions and thoughts may increase in frequency or intensity (Blackledge and Hayes, 2001; Hayes *et al.*, 2011). Without exposure or acceptance of private experiences, individuals do not learn to cope with distressing emotions, leading to cognitive fusion (Blackledge and Hayes, 2001; Hayes *et al.*, 2011). Moreover, cognitive fusion may also impair the metacognitive ability of decentring or disidentification of painful experiences which may also comprise the allocation of flexible emotion regulation strategies (Faustino *et al.*, 2019; Gross, 2002).

Previous research has associated cognitive fusion with early maladaptive schemas and psychological needs (Faustino and Vasco, 2020a,b), lower levels of metacognition (Faustino *et al.*, 2019), depressive symptomatology (Gillanders *et al.*, 2014) and psychological distress (Bardeen and Fergus, 2016). Furthermore, Plonsker *et al.* (2017) showed that cognitive fusion impairs emotional differentiation, which is the ability to identify and describe different emotions. Krafft *et al.* (2019) showed that cognitive fusion was a better predictor than cognitive reappraisal of psychological distress and symptomatology. Levin *et al.* (2014) describe psychological inflexibility as a transdiagnostic pathological process and a target for interventions in anxiety, depression and substance use disorders. Moreover, Faustino and Vasco (2020b), found that cognitive fusion mediates the relationship between early maladaptive schemas and symptomatology. Thus, this evidence shows that cognitive fusion is associated with several dysfunctional psychological constructs, including difficulties in emotional differentiation. However, it is not clear how cognitive fusion (as a measure of psychological inflexibility) is related to emotional regulation strategies, such as cognitive reappraisal and emotional suppression, and to what extent these relationships have a transdiagnostic potential.

Emotion regulation and emotional dysregulation domains

Emotion regulation and emotional dysregulation are emphasized as targets for psychological intervention in most psychotherapies or theoretical models, despite their theoretical roots, including cognitive behavior therapy (CBT; Beck, 1976), schema therapy (ST; Young *et al.*, 2003), metacognitive interpersonal therapy (MIT; Dimaggio *et al.*, 2015), mentalization-based therapy (MBT; Bateman and Fonagy, 2006), mindfulness-based cognitive therapy (MBCT; Segal *et al.*, 2013) and paradigmatic complementarity metamodel (PCM; Vasco *et al.*, 2018). Furthermore, emotion regulation has empirical support as a transdiagnostic construct (Barlow *et al.*, 2017; Sloan *et al.*, 2017).

Despite the wide range of methodological approaches and conceptual applications, a clear definition and differentiation between emotion regulation and emotional dysregulation is still lacking (Hallion *et al.*, 2018). Gross (2002) defines emotion regulation as the strategies used to increase, maintain or diminish the various components (feelings, behaviours, cognitions and physiological responses) of the emotional response. The author proposes that emotion regulation may be achieved by *cognitive reappraisal*, i.e. change of the way to assess the situation before it happens, and *emotion suppression*, i.e. response modulation whose focus is after emotional impact. Linehan (1993) defines emotional dysregulation as a vulnerability to regulate emotions and a lack of regulatory skills to apply emotion regulation strategies.

Furthermore, cognitive reappraisal has been associated with lower levels of anxiety and depression, whereas emotion suppression has been associated with higher levels of psychopathology (Aldao *et al.*, 2010). In a meta-analysis by Webb *et al.* (2012), strategies focused on emotion suppression were found to be less efficient in emotion regulation than cognitive reappraisal. Morris and Mansell (2018) propose that whether suppression is pathological could be viewed as context specific (e.g. suppression of extreme sadness at the work is not necessarily pathological), rather than a generalized coping strategy. The authors emphasize that individual differences in the application of efficient emotion regulation strategies may be a key feature determining psychopathology. In their view, it is the inflexible application of the emotion regulation strategies, such as emotion suppression, that may increase symptomatology.

Gratz and Roemer (2004) state that the process of emotion regulation involves the ability to control impulsive behaviours, the ability to orient behaviours towards goals when experiencing unpleasant emotions and *flexibility* in the use of the various strategies, in order to adapt the strategy to be used to the context of the specific situation, taking into account individual objectives, their costs and benefits. When these capacities are not possessed, difficulties arise in emotional regulation (Gratz and Roemer, 2004; Gross, 2002). The authors list six emotional dysregulation domains (which will be the term used in this work): (1) lack of awareness of emotional responses (consciousness); (2) difficulty of understanding the emotional response (clarity); (3) non-acceptance of emotional response (non-acceptance); (4) limited access to emotional regulation strategies perceived as effective (strategies); (5) difficulty of impulse control (impulses); and (6) difficulty engaging in goal-oriented behaviours when experiencing unpleasant emotions (objectives).

Previous research has associated emotional dysregulation domains with experiential avoidance and emotional expression (Gratz and Roemer, 2004), anxiety and mood disorders (Abravanel and Sinha, 2015; Marganska *et al.*, 2013), post-stress traumatic disorder (Lilly and Lim, 2013), psychological distress (Castelo-Branco, 2016), symptomatology (Coutinho *et al.*, 2010) and borderline personality disorder (Scott *et al.*, 2014). Questions may be raised about the role of cognitive reappraisal and emotion suppression on emotional dysregulation domains: how these strategies facilitate or supplant emotional difficulties, or if cognitive fusion may also play a role in these processes. Thus, it is not clear how emotional dysregulation relates to cognitive fusion and if it facilitates symptomatology.

Theoretical research issues and hypothesis

According to the ACT model of psychopathology, psychological inflexibility is essentially a consequence of experiential avoidance and cognitive fusion (Hayes *et al.*, 2011). Importantly, cognitive fusion may be related to emotional regulation strategies (cognitive reappraisal and emotion suppression), although one may be adaptive and the other may be maladaptive. Thus, emotion suppression may be viewed as a form of experiential avoidance and it has been more associated with psychopathology than cognitive reappraisal (Aldao *et al.*, 2010). Therefore, it is important to explore if these two processes would predict cognitive fusion across two samples. According to Gross (2014), emotion regulation is a developmental process that may be disrupted through dysfunctional emotional experiences which in turn leads to experiential avoidance and cognitive fusion, in turn leading to emotional dysregulation and symptomatology.

The inflexibility associated with cognitive fusion may also play a role in the relationship between emotion regulation strategies and emotional dysregulation domains. Thus, it is the inflexible way of the application of regulatory process that may lead to psychopathology (Morris and Mansell, 2018). Therefore, it would also be interesting to explore if cognitive fusion mediates the relationship between emotion regulation strategies and emotional dysregulation domains across different samples. It is also expected that there may be some individual

differences in the application of emotion regulation strategies. However, it is not clear if these relationships are the same in the non-clinical and clinical populations.

Finally, cognitive fusion had been consistently associated with symptomatology (Bardeen and Fergus, 2016; Faustino and Vasco, 2020a,b; Gillanders *et al.*, 2014). However, it is not clear if emotional dysregulation domains play a mediational role in the relationship between cognitive fusion and symptomatology beyond diagnosis. Furthermore, if cognitive fusion and emotion regulation strategies are related beyond the two samples, this may support the previous assumption of these processes being transdiagnostic constructs.

To test these predictions, two samples were analysed (non-clinical and clinical) and compared on the described psychological constructs. Within this framework, the following research issues and hypotheses were raised:

- Cognitive fusion, emotion regulation strategies (reappraisal and suppression) and emotional dysregulation domains are statistically different in the two samples (Hypothesis 1);
- Cognitive fusion is associated with emotion regulation strategies (reappraisal and suppression) and emotional dysregulation domains in the two samples (Hypothesis 2);
- Cognitive fusion is predicted by emotion regulation strategies (reappraisal and suppression) and emotional dysregulation domains in the two samples (Hypothesis 3);
- Cognitive fusion is a significant mediator of the relationship between emotion regulation strategies (reappraisal and suppression) and emotional dysregulation domains in the two samples (Hypothesis 4);
- Emotional dysregulation domains are significant mediators of the relationship between cognitive fusion and symptomatology in the two samples (Hypothesis 5).

Method

Participants

The sample included 297 participants, distributed in two different samples, the non-clinical sample and the clinical sample. The non-clinical sample consisted of 231 participants, of whom 50 were male (21.6%) and 181 were female (78.4%). The age of the men varied between 20 and 67 years (mean = 32.72, *SD* = 12.37) and the age of the women varied between 18 and 62 years (mean = 30.30, *SD* = 11.48). Educational level frequencies were 41 (17.7%) with 12th grade, 131 (56.7%) with a Bachelor degree and 59 (25.6%) with a Masters or Doctoral degree. The clinical sample consisted of 66 participants, 16 males (22.7%) and 50 females (77.3%). The age of the men varied between 20 and 67 years (mean = 44.73, *SD* = 16.19) and the age of the women ranged from 18 to 77 years (mean = 47.00, *SD* = 12.26). Educational level frequencies were 7 (10.6%) with 4th year, 3 (4.5%) with 6th year, 9 (13.6%), with 9th year, 24 (36.4%) with 12th year, 19 (28.8%) with a Bachelor degree and 4 (6.1%) with a Masters or Doctoral degree.

Individuals in the clinical sample were diagnosed by two resident psychiatrists according to Diagnostic and Statistical Manual of Mental Disorders IV (DSM IV) criteria. In the clinical sample ($N = 66$), the diagnostic distribution was: dysthymia ($n = 14$, 21.2%), major depressive disorder ($n = 10$, 15.2%), depressive episode ($n = 7$, 10.6%), recurrent depressive disorder ($n = 4$, 6.1%), bipolar disorder type 1 and 2 ($n = 7$, 13.8%), anxiety disorders ($n = 5$, 8.6%), obsessive-compulsive disorder ($n = 3$, 4.5%), borderline personality disorder ($n = 3$, 4.5%), depressive personality disorder ($n = 1$, 1.5%), anti-social personality disorder ($n = 1$, 1.5%), dependent personality disorder ($n = 1$, 1.5%) and delirium disorder ($n = 1$, 1.5%). There were also post-partum depressive disorder, pathological grief and psychotic episode (all with $n = 1$, 1.5%). There were six participants (9.1%) that did not have any diagnosis. Participants with

co-morbidity with personality disorder were 10 (17.2%), and six (9.1%) without. Sixty-one participants (83.4%) were in a psychotherapy process, whereas only five (7.6%) were not.

Materials

Cognitive Fusion Questionnaire

The Cognitive Fusion Questionnaire (QFC; Gillanders *et al.*, 2014; translated and adapted by Gouveia *et al.*, 2013), is a self-report measure with seven items, designed to assess cognitive fusion. Each item is rated on a 7-point Likert scale (1 = never true to 7 = always true). Internal consistency was high in the non-clinical ($\alpha = .94$) and clinical ($\alpha = .89$) samples.

Emotion Regulation Questionnaire

The Emotion Regulation Questionnaire (ERQ) was developed by Gross and John (2003) to evaluate and understand the use of two strategies of emotional regulation. The ERQ (Portuguese version by Vaz and Martins, 2009) is a self-reporting measure that contains 10 items to be answered on a Likert scale. Items are organized into two factors that reflect the two strategies of emotional regulation: cognitive reappraisal and emotional suppression. Internal consistency ranged from $\alpha = .73$ to $\alpha = .79$ in both samples.

Difficulties in Emotional Regulation Scale

The Difficulties in Emotion Regulation Scale (DERS; Gratz and Roemer, 2004; Portuguese version by Coutinho *et al.*, 2010) is a self-report scale that aims to assess emotional dysregulation domains in adults. It consists of 36 items, divided into six subscales representative of emotional dysregulation domains. It is a self-report questionnaire to be answered according to a Likert scale, whose extremes are 1 (almost never) to 5 (almost always). Internal consistency ranged from medium ($\alpha = .75$) to high ($\alpha = .92$) in total index and subscales in both samples.

Brief Symptom Inventory

To evaluate symptomatology, the Brief Symptom Inventory (BSI; Canavarro, 1999; Portuguese version of the Brief Symptom Inventory: Derogatis, 1993) was used. The BSI is a self-report inventory, composed of 53 items, with a 5-point Likert-type response scale (0 = never to 4 = many times), aiming to evaluate the psychopathological symptoms. This scale had a high internal consistency ($\alpha = .90$) in its original study. In the present investigation, the internal consistency was considered high in both samples (non-clinical, $n = 231$, $\alpha = .97$; clinical, $n = 66$, $\alpha = .97$).

Procedures

The clinical sample was collected at the Centro Hospitalar Lisboa Ocidental (CHLO). Individuals in the clinical sample were diagnosed by two resident psychiatrists. The non-clinical sample was collected online through social media. Participants were tested individually, within a 4-day maximum period to complete the research protocol. All participants consented in participating in the study, which was approved by the ethics committee of the Scientific Committee of Faculty of Psychology of University of Lisbon. There was no compensation for participating in the study.

Data analysis

Descriptive statistics were used for sample characterizations. To explore mean differences within the two samples, a *t*-test was used. To test associations between variables, a Pearson

Table 1. Means, standard deviations and *t*-test values for cognitive fusion, emotion regulation and emotional dysregulation domains in the non-clinical sample (*n* = 231) and the clinical sample (*n* = 66)

	Non-clinical		Clinical		t-test	
	Mean	SD	Mean	SD	d.f.	<i>p</i> **
Cognitive fusion	3.42	1.59	4.69	1.47	295	.000
Emotion regulation	4.07	.92	4.18	1.17	295	.445
Cognitive reappraisal	4.52	1.21	4.39	1.55	295	.471
Emotion suppression	3.40	1.25	3.86	1.43	295	.012
Emotional dysregulation domains	2.63	.58	2.96	.59	295	.000
Lack of strategies	2.30	.82	2.84	.88	295	.000
Non-acceptance	2.27	1.00	2.93	1.13	295	.000
Lack of consciousness	3.64	.88	3.48	.80	295	.208
Impulses	2.18	.75	2.48	.91	295	.007
Difficulties on objectives	2.94	.78	3.31	.80	295	.015
Non-clarity	2.62	.46	2.78	.56	295	.034

** *p* < .001.

product-moment correlation coefficient was used. A stepwise regression analysis was used to explore predictive values. Mediation analysis was performed with a Process matrix to SPSS (Hayes, 2013). Statistical analyses were performed in IBM SPSS Statistics version 24.

Results

Comparison between samples

Means, standard deviations and *t*-test for independent samples for cognitive fusion, emotion regulation and emotional dysregulation domains in the non-clinical sample (*n* = 231) and the clinical sample (*n* = 66) are described in Table 1. Statistically significant differences were found between the two samples for almost all variables (*p* < .001). However, no statistically significant differences between the two samples were found in emotion regulation, cognitive reappraisal and lack of consciousness (partial confirmation of Hypothesis 1).

Correlations between cognitive fusion and emotional dysregulation

Through Pearson's correlations, the associations between cognitive fusion, emotional regulation and emotional dysregulation domains in the non-clinical sample (*n* = 231) and the clinical sample (*n* = 66) were identified – see Table 2. In the non-clinical sample, cognitive fusion was negatively correlated with cognitive reappraisal ($r = -.242, p < .001$) and positively correlated with emotion suppression ($r = .381, p < .001$) and emotional dysregulation domains ($p < .001$). In the clinical sample, cognitive fusion was also negatively correlated with cognitive reappraisal ($r = -.249, p < .001$) and medium to strongly correlated with almost all emotional dysregulation domains ($p < .001$) with the exception of lack of consciousness. Hypothesis 2 was thus partially confirmed.

Stepwise regression analysis with cognitive fusion and emotional dysregulation

Stepwise multiple linear regression was used to assess whether cognitive fusion was predicted by emotional regulation strategies and emotional dysregulation domains in the two samples – see Table 3. An integrative model was found with four predictors explaining 48% of the variance of cognitive fusion ($R^2 = .487, F = 53.634, p < .000$) in the non-clinical sample (*n* = 231). In the clinical sample (*n* = 66), an integrative model was found with two predictors explaining 25% of the variance in cognitive fusion ($R^2 = .249, F = 10.319, p < .000$). Hypothesis 3 was thus partially confirmed.

Table 2. Correlational analysis between cognitive fusion, emotion regulation and emotional dysregulation domains in the non-clinical sample ($n = 231$) and the clinical sample ($n = 66$)

	Cognitive fusion	
	Non-clinical ($n = 231$)	Clinical ($n = 66$)
Emotion regulation	.015	.188
Cognitive reappraisal	-.242**	-.249**
Emotion suppression	.381**	.020
Emotional dysregulation domains	.564**	.486**
Lack of strategies	.663**	.420**
Non-acceptance	.550**	.470**
Lack of consciousness	.161**	.016
Impulses	.521**	.333**
Difficulties on objectives	.510**	.391**
Non-clarity	.339**	.332**

** $p < .001$.**Table 3.** Hierarchical regression analysis with emotion regulation strategies emotional dysregulation domains on cognitive fusion as a dependent variable in the non-clinical sample ($n = 231$) and the clinical sample ($n = 66$)

	R^2	B	$SE B$	β	t	p	VIF
Non-clinical sample ($n = 231$)							
Emotion suppression	.145	.348	.064	.274	5.475	.000	1.104
Cognitive reappraisal	.220	-.159	.065	-.122	-2.429	.016	1.104
Lack of strategies	.468	.781	.132	.405	5.909	.000	2.071
Difficulties on objectives	.487	.387	.132	.190	2.929	.004	1.856
F			53.634				
Clinical sample ($n = 66$)							
Cognitive reappraisal	.062	-.161	.106	-.169	-1.525	.132	1.043
Non-acceptance	.249	.571	.145	.439	3.953	.000	1.043
F			10.442				

Only significant results are shown. VIF, variance inflation factor.

Mediational analysis between cognitive fusion, emotional dysregulation domains and symptomatology

It was tested with Process SPSS macro (Hayes, 2013), if cognitive fusion was a significant mediator of the relationship between emotion regulation strategies and emotional dysregulation domains in the two samples (bootstrap of 1000 computations was used). In the non-clinical sample, cognitive fusion mediates the relationship between cognitive reappraisal [$b = -.315$, 95% confidence interval (CI) $-.100$ to $-.024$, $p < .001$] and emotion suppression ($b = .483$, 95% CI $.021$ to $.152$, $p < .001$) with emotional dysregulation. In the clinical sample, the relationship between cognitive reappraisal and emotional dysregulation was mediated by cognitive fusion ($b = -.234$, 95% CI $-.098$ to $-.001$, $p < .025$). Cognitive fusion was not a significant mediator of the relationship between emotion suppression and emotional dysregulation on the clinical sample. Thus, Hypothesis 4 was partially confirmed.

Moreover, it was tested if emotional dysregulation domains were significant mediators of the relationship between cognitive fusion and symptomatology in the two samples. In the non-clinical sample, the relationship between cognitive fusion and symptomatology was mediated by lack of strategies, non-acceptance and non-consciousness ($p < .001$) – see Fig. 1.

In the clinical sample, the relationship between cognitive fusion and symptomatology was mediated by lack of strategies and impulses ($p < .001$) – see Fig. 2. Therefore, there was a partial confirmation of Hypothesis 5.

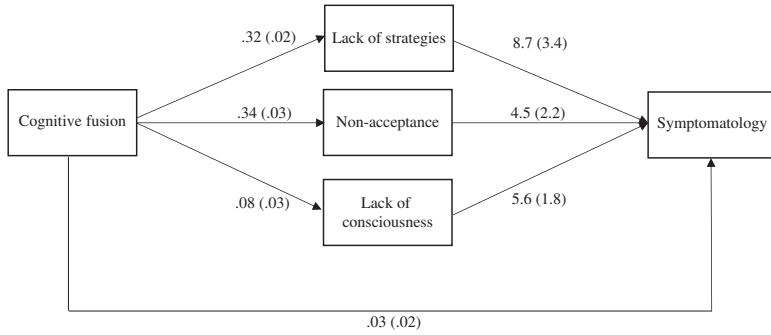


Figure 1. Mediation analysis between cognitive fusion and symptomatology in a non-clinical sample ($n = 231$). Only significant results are described.

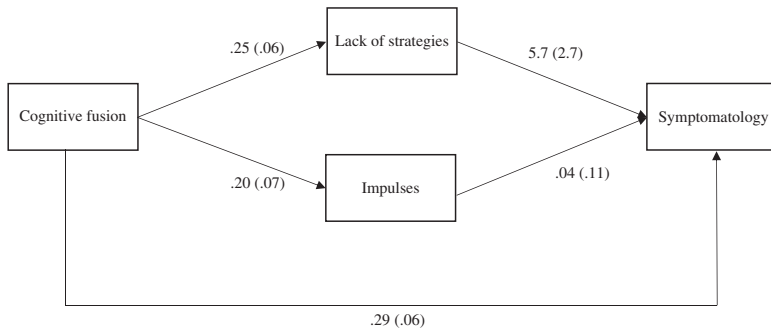


Figure 2. Mediation analysis between cognitive fusion and symptomatology in a clinical sample ($n = 66$). Only significant results are described.

Discussion

Psychological inflexibility may be viewed as a consequence of experiential avoidance and cognitive fusion, leading to symptomatology. This research focused on the relationships between cognitive fusion, emotion regulation, emotional dysregulation domains and symptomatology within a transdiagnostic perspective. Cognitive fusion was expected to be negatively associated with cognitive reappraisal and positively associated with emotion suppression and emotional dysregulation domains in the two samples. All hypotheses were partially confirmed. Results were mixed but may support a transdiagnostic perspective.

Regarding the first hypothesis, the majority of variables revealed statistically significant differences between mean samples, whereas cognitive reappraisal and lack of emotional awareness were not statistically different in the two samples. These results show that cognitive reappraisal and the lack of consciousness may be independent processes and may be present in a wide range of individuals with or without symptomatology. Cognitive reappraisal is viewed as an adaptive process and may be applied by individuals in both non-clinical and clinical samples. Furthermore, almost all means in the clinical sample were higher than in the non-clinical sample. Individuals in the clinical sample tended to have a higher degree of cognitive fusion, apply emotion suppression more often and have a higher degree of emotional dysregulation than individuals in the non-clinical sample, being in line with previous results (Bardeen and Fergus, 2016; Gillanders *et al.*, 2014; Levin *et al.*, 2014; Plonsker *et al.*, 2017; Webb *et al.*, 2012). This was expected because cognitive fusion has been associated with clinical populations (Faustino and Vasco, 2020a,b) and emotion suppression

has been associated with higher levels of symptoms than cognitive reappraisal (Aldao *et al.*, 2010). In the same sense, emotional dysregulation domains of lack of strategies, non-acceptance, impulses, difficulties on objectives and non-clarity were also higher in the clinical sample than the non-clinical sample, this being in line with previous findings (Coutinho *et al.*, 2010). Leahy *et al.* (2011) discuss that emotion suppression may be adaptive in some situations, such as suppression of fear in a catastrophic situation. Emotional suppression can also be useful in more mundane situations, such as in a discussion with a partner, friend or co-worker, if anger, resentment or disdain increases unproductively (Greenberg, 2015). Therefore, this strategy may be used by different individuals as a normative emotion regulation skill, independently of symptomatology (Aldao *et al.*, 2010; Brockman *et al.*, 2017; Morris and Mansell, 2018). Finally, *lack of consciousness* (which means difficulties in understanding the emotional response) may also be beyond diagnosis because it may also reflect a difficulty in attending to emotional experience which may be viewed as broader (Greenberg, 2015). Individuals with severe psychopathology may often engage in experiential avoidance, which contributes to not having *consciousness* of their emotions (Gratz and Roemer, 2004; Hayes *et al.*, 2011; Linehan, 1993). Nevertheless, individuals in treatment may have developed the ability to give attention to emotional experience, giving them higher abilities of emotional awareness.

The second hypothesis was also partially confirmed. Cognitive fusion correlated negatively with cognitive reappraisal and positively with emotion suppression and emotional dysregulation domains in the non-clinical sample, but it did not correlate with *emotion suppression* and *lack of consciousness* in the clinical sample. These results support the assumption that cognitive fusion may have a pervasive impact on emotion regulation strategies (Krafft *et al.*, 2019; Plonsker *et al.*, 2017). However, the absence of associations of *cognitive fusion* with *emotion suppression* and *lack of consciousness* in the clinical sample may be explained by the effects of psychotherapy. One could argue that individuals in the clinical sample may have developed some degree of new adaptive emotion regulation skills, such as attention to emotional experience and decentering which could weaken the association between cognitive fusion and emotional suppression. Attention to emotional experience is a key aspect to the development of emotional awareness (Greenberg, 2015). Another possible explanation may be due to reliability issues in the *lack of consciousness* subscale of DERS. Ruganci and Gençöz (2010), described some inconsistencies in internal consistency and test–retest in different psychometric studies of DERS, which may introduce some measurement limitations of the operationalized construct. Nevertheless, DERS was already used to explore transdiagnostic constructs associated with emotional dysregulation (Neacsiu *et al.*, 2014). In this sense, it is necessary to replicate these results to further explore this issue. Moreover, the association between *cognitive fusion* and *emotion suppression* in the non-clinical sample indicates that *suppression* may be adaptive or maladaptive. Morris and Mansell (2018) stated that *emotion suppression* becomes maladaptive when used inflexibly, regardless of context-specific demands. As stated before, the suppression of distressful emotions in a work context may be adaptive. However, when suppression is always applied, regardless of context-demands, it may lead to maladaptive experiential avoidance, which in turn leads to cognitive fusion (Hayes *et al.*, 2011; Morris and Mansell, 2018). The results obtained here further suggest that the association between cognitive fusion and cognitive reappraisal may be more significant in the clinical population than the association between cognitive fusion and suppression, which is in line with previous research (Gross and John, 2003; Kashdan and Rottenberg, 2010; Webb *et al.*, 2012).

The third hypothesis was partly confirmed. In the non-clinical sample, cognitive fusion was predicted within a composite model of *emotion suppression*, *cognitive reappraisal*, *lack of strategies*, *difficulties on objectives* and *lack of consciousness*. In the clinical sample, cognitive fusion was predicted by *cognitive reappraisal* and *non-acceptance*. In the two samples, cognitive reappraisal was a significant predictor of cognitive fusion within a composite model

by absence, which means that it is the lack of reappraisal abilities that contributes to the explained variance in the regression models. The regression model in the clinical sample may support the theoretical assumption that individuals who lack reappraisal skills and have difficulty accepting their emotions tend to be more fused with their thoughts (cognitive fusion), which is consistent with the psychopathological model ACT (Hayes *et al.*, 2011). These results may support the assumption that cognitive reappraisal is an adaptive regulation strategy (Aldao *et al.*, 2010; Gross, 2002; Gross and John, 2003) and cognitive fusion may be a result of emotion suppression which is a form of experiential avoidance (Hayes *et al.*, 2011; Morris and Mansell, 2018). These results also align with the negative correlation between *cognitive fusion* and *cognitive reappraisal* which was evident in the two samples, implying that this association may be a candidate for a transdiagnostic feature. *Cognitive reappraisal* is the adaptive emotion regulation strategy that individuals use to re-evaluate stressful situations, reducing emotional arousal (Gross, 2002; Gross and John, 2003), which imply to some extent some form of *psychological flexibility*. In order to shift from the first to the second cognitive evaluation (reappraisal), individuals must have the ability to distance themselves from the first evaluation. It is the ability to shift internal dispositions accordingly with context-dependent demands that underlies psychological flexibility (Kashdan and Rottenberg, 2010). Therefore, these results show that lower levels of cognitive reappraisal and higher levels of emotion suppression may predict some degree of cognitive fusion. Moreover, other variables were also significant on the regression analysis in the non-clinical sample. Thus, difficulties in assessing strategies to cope with or being aware of emotions associated with cognitive reappraisal and emotional suppression, may add explanatory value to the variance of cognitive fusion. Therefore, this can emphasize the predictability of the multidimensionality of cognitive fusion and psychological inflexibility. This imply that several factors may underlie psychological inflexibility which is in line with previous findings (Aldao *et al.*, 2010; Hayes *et al.*, 2011; Kashdan and Rottenberg, 2010; Morris and Mansell, 2018).

The fourth hypothesis was partially confirmed. Cognitive fusion was a significant mediator of the relationship between emotion regulation strategies (cognitive reappraisal and emotion suppression) and emotional dysregulation in the non-clinical sample. However, in the clinical sample cognitive fusion was only a significant mediator of the relationship between cognitive reappraisal and emotional dysregulation. This was not expected, because cognitive reappraisal has been associated with lower levels of anxiety and emotional suppression has been associated with higher levels of psychopathology (Aldao *et al.*, 2010; Webb *et al.*, 2012). One likely explanation may be due to the development of new emotion regulation strategies because individuals in the clinical sample were engaged in psychotherapy. Maybe individuals in the clinical sample may already have developed some abilities to some extent tolerate, control and soothe emotional distress, giving them some flexibility in the implementation of emotion suppression. Therefore, this may disrupt the direct inflexible association between cognitive fusion and emotion suppression. It is the association between these two variables that may have weakened and not the use of emotion suppression, as there is a significant difference between sample means in the Emotion Regulation Questionnaire. A second possible explanation may be related to individual differences that could be associated with the first explanation, because it encompasses diverse factors (e.g. effects of therapy, previous coping strategies, psychopathology). Morris and Mansell (2018) proposed that individual differences in inflexibility may be a core factor in the application of coping processes, which could help to explain why cognitive fusion was only a significant mediator of both emotion regulation strategies in the non-clinical sample. Webb *et al.* (2012) described that different strategies in emotion regulation have different levels of effectiveness (e.g. reappraising the emotional response was less effective than reappraising the emotional stimulus), which also implies that individual differences are relevant in emotion regulation (Gross and John, 2003). A third explanation may be due to different underlying pathological mechanisms of different

diagnoses in clinical sample. Leahy *et al.* (2011) state that emotion regulation may have different underlying mechanisms of emotion intensification (e.g. terror, panic, trauma), emotion deactivation (e.g. dissociation, depersonalization, splitting) and strategies such as rumination, worry and avoidance, which may be different for anxiety and depressive disorders. Furthermore, cognitive fusion was a significant mediator in the two samples, which shows that the relationship between cognitive fusion and cognitive reappraisal may be more widespread and less susceptible to individual differences. Thus, this result supports the previous assumption that *cognitive fusion* and *cognitive reappraisal* may be a *transdiagnostic* process in precipitating and maintaining emotional disorders (Levin *et al.*, 2014; Sloan *et al.*, 2017).

The fifth hypothesis was partially confirmed. In the non-clinical sample, the relationship between cognitive fusion and symptomatology was mediated by *lack of strategies*, *non-acceptance* and *lack-consciousness*, whereas in the clinical sample the same relationship was mediated by *lack of strategies* and *impulses*. To some extent this was expected (Coutinho *et al.*, 2010; Gratz and Roemer, 2004; Marganska *et al.*, 2013). The *lack of strategies* is the common dominator here, which implies to some extent that individuals who do not have access to emotion regulation strategies could be prone to symptomatology (Aldao *et al.*, 2010; Gratz and Roemer, 2004), beyond diagnosis. Maybe this emotional dysregulation domain may be also a candidate to be considered as a transdiagnostic construct. Moreover, Webb *et al.* (2012) suggested that several mediators may play a role in emotion regulation effectiveness (e.g. to-be-regulated emotion, frequency of strategies used), which may also help to explain the difference in the mediation models in the two samples. This is also true for depression (Abravanel and Sinha, 2015). It is noteworthy that in the non-clinical sample, there were more emotional dysregulation domains than in the clinical sample. Clinical populations seem to have fewer variables that explain symptomatology in predicative models where in non-clinical populations there could be more dysfunctional mechanisms responsible for underlying psychological problems than in the clinical population (Faustino and Vasco, 2020b; Morris and Mansell, 2018). It seems that in clinical populations the dysfunctional mechanisms are more related to severity than diversity. However, more studies are required to explore this statement.

Limitations and future directions

Regarding the limitations, it is possible to make several considerations. The use of self-report measures circumscribes the responses to individuals' self-knowledge. The present study was made using a cross-sectional design which limits cause/effect interpretations. The discrepancy in the samples size may have some implications in comparisons. The sample size of the clinical sample may have had an impact on regression and mediation analyses. Maybe the reduced size of the clinical sample may have limited the power of statistical analysis. However, the tested model may forecast possible new studies with larger samples. An inherent condition for clinical populations is their heterogeneity in terms of dysfunctional variables, coping mechanisms and symptomatology, which may constrain participants' responses in face-to-face assessment. In the future, we expect to explore the predictive and mediational value of cognitive fusion in emotional processing difficulties (Faustino and Vasco, 2020c) and emotional schemas (Faustino *et al.*, 2020). Also, it is intended to explore the relationships between cognitive fusion, psychological distress and well-being.

Conclusions

Psychological inflexibility and emotional dysregulation are associated beyond diagnostic criteria. Individuals tend to apply emotion regulation strategies as cognitive reappraisal or emotion suppression according to individual differences in coping with symptoms or with emotional

difficulties underlying emotion dysregulation. However, the relationships between cognitive fusion, cognitive reappraisal and lack strategies tend to be less sensible to individual differences and may be a core transdiagnostic processes in the precipitation and maintenance of psychological inflexibility and emotion dysregulation.

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